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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
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10/616,939

07/11/2003

Yukari Aoki

03500.017408

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5514 7590 05/31/2007  
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EXAMINER

GOMA, TAWFIK A

ART UNIT

PAPER NUMBER

2627

MAIL DATE

DELIVERY MODE

05/31/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/616,939             | AOKI, YUKARI        |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Tawfik Goma            | 2627                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f):
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

This action is in response to the amendment filed on 3/7/2007.

#### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawaguchi et al (US 6826131) in view of Kagami et al (US 5341349).

Regarding claim 1, Kawaguchi discloses a magneto-optical recording medium comprising: a resin substrate (15, fig. 1 and col. 6 lines 35-36); an underlying layer provided on the substrate (10, fig. 1); and a magnetic layer having at least a magnetic domain wall displacement layer in which a magnetic domain wall is displaced (11, fig. 1), a recording layer storing information (13, fig. 1), and a switching layer provided between said magnetic domain wall displacement layer and said recording layer (12, fig. 1), the switching layer having a temperature lower than that of each said layer comprising the magnetic layer (col. 7 lines 19-40), wherein the underlying layer is adjacent to the magnetic domain wall displacement layer (fig. 1). Kawaguchi fails to disclose wherein the underlayer is formed of a first and second underlayer and said second underlying layer is adjacent to said magnetic domain wall displacement layer, said first underlying layer is adjacent to said second underlying layer and on the side of said substrate, and said first underlying layer has a lower density than a density of said second underlying layer. In the same field of endeavor, Kagami discloses first and second

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underlayers (12, 13 fig. 5) wherein the first underlayer is adjacent to a resin substrate (12, 11, fig. 5 and col. 3 lines 33-37) and the first underlying layer has a lower density than a density of the second underlying layer (col. 2 lines 41-57). It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the recording medium disclosed by Kawaguchi by providing a first and second under layer with different densities. The rationale is as follows: One of ordinary skill in the art would have been motivated to provide the first and second underlayer in order to enhance the recording sensitivity and mechanical strength of the medium (see Kagami col. 2 lines 52-57)

Regarding claim 2, Kagami further discloses a method of producing a medium comprising a film-forming step of forming a first underlying layer and a second underlying layer on a substrate by sputtering, wherein in said film-forming step, a sputtering gas pressure during formation of said first underlying layer is higher than a sputtering gas pressure during formation of said second underlying layer (table 3 and col. 9 lines 54-61).

Regarding claim 3, Kagami further discloses wherein in said film-forming step, said second underlying layer is continuously formed on said first underlying layer by changing a gas flow rate after said first underlying layer is formed (col. 9 lines 54-61).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawaguchi et al (US 6826131) in view of Kagami et al (US 5341349) as applied to claims 1-3 above and further in view of Chen (US 4202932).

Regarding claim 4, Kawaguchi in view of Kagami disclose everything claimed as applied to claim 1 above. Kagami further to disclose the method of producing the disk including the step a film-forming step of forming a first underlying layer and a second underlying layer on a

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resin substrate by sputtering (col. 9 lines 54-61). Kagami fails to disclose wherein in said film-forming step, a distance between a target and said substrate during formation of said first underlying layer is larger than a distance between the target and said substrate during formation of said second underlying layer. In the same field of endeavor, Chen discloses a method of controlling a deposition rate or density of the layer to be formed by controlling a distance between a substrate and a target during sputtering (col. 5 lines 33-41). It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the method of producing the medium disclosed by Kawaguchi in view of Kagami by controlling a distance from substrate and a target. The rationale is as follows: One of ordinary skill in the art would have been motivated to control a density of the layer by controlling the substrate to target distance as a well known alternative parameter set for controlling the deposition rate.

#### ***Response to Arguments***

Applicant's arguments filed 3/7/2007 have been fully considered but they are not persuasive. Regarding applicant's argument that Kagami does not disclose a DWDD type disc and the features of a first and second underlayer of Kagami can therefore not be combined with the DWDD type disc of Kawaguchi, this argument is not persuasive because Kagami does disclose a Domain Wall Displacement type disc (col. 5 lines 39-54). The difference of the DWDD disc of Kagami and Kawaguchi is the use of a switching layer and a reproduction layer along with a recording layer in order to allow for denser recording in the recording layer due to the expansion of the magnetic domains during reproduction. Applicant's argument that the combination of Kagami and Kawaguchi would have to apply the dielectric layer directly adjacent to the surface of a recording layer is not persuasive because the combination would maintain the

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recording layer structure of Kawaguchi (i.e. recording layer, switching layer, and reproduction layer) and only replace the interference dielectric layer already disclosed in Kawaguchi (col. 6 lines 23-29) by a dual dielectric layer disclosed by Kagami. The advantage of providing the dual dielectric layers of Kagami is that it assists in the magnetic domain wall displacement because it prevents atoms from the magnetic layers from penetrating the other layers, thereby making the magnetic domain wall displacement easier and less likely to fluctuate. This advantage is still applicable to a DWDD type disc of Kawaguchi (one with three magnetic layers rather than only one) because it would still continue to prevent atoms of the magnetic layer (in the combination the magnetic layer adjacent to the dielectrics is the reproduction layer of Kawaguchi) from penetrating other layers, thereby improving the domain wall displacement. The dual dielectric layer is required to have a dense dielectric that would not allow for atoms to penetrate adjacent to the magnetic layer, and a less dense magnetic layer adjacent to the substrate in order to decrease the stress on the substrate and prevent the disc from cracking. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

### ***Conclusion***

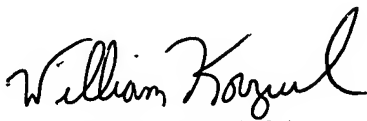
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tawfik Goma whose telephone number is (571) 272-4206. The examiner can normally be reached on 8:30 am - 5:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on (571) 272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

T. Goma  
/Tawfik Goma/  
5/22/2007

  
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